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(54) **CUTTING-OFF STRUCTURE OF A PACKER**

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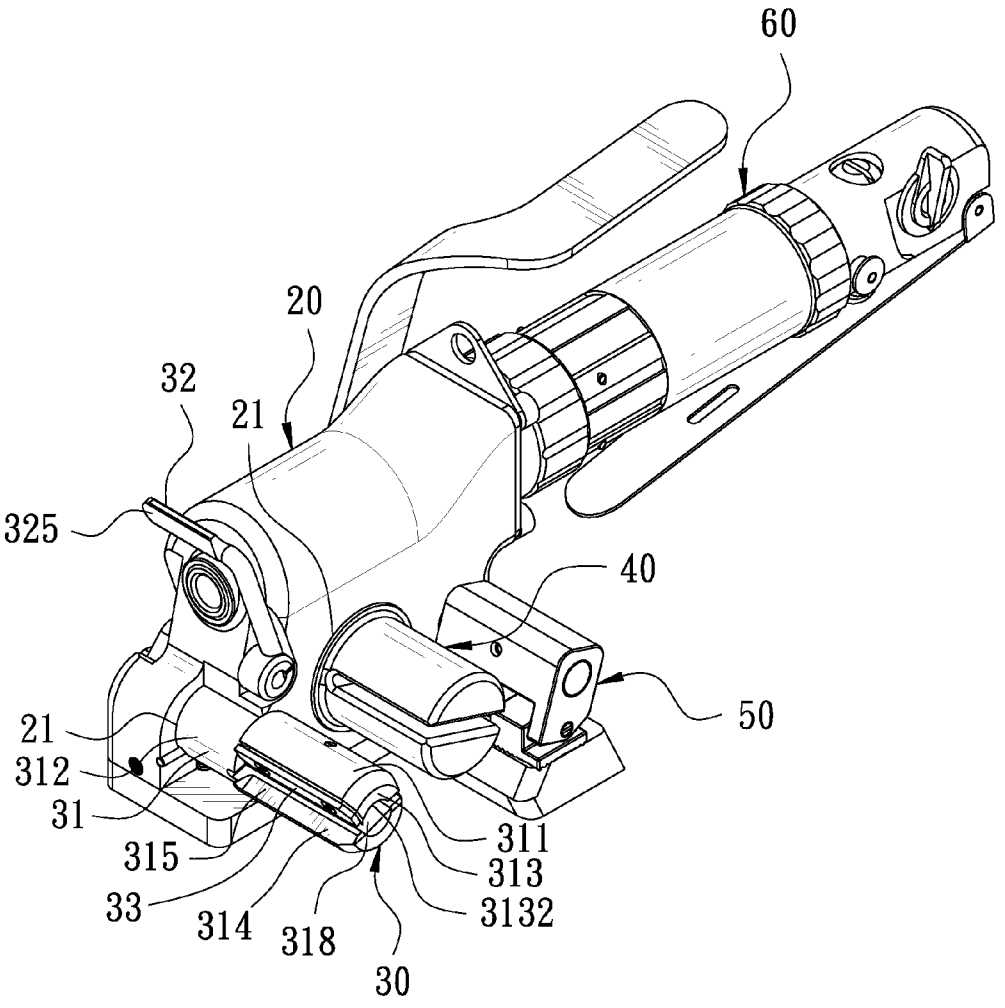
(57) **ABSTRACT**

A cutting-off structure of a packer includes a main body having one side provided with a strap-cutting device. The strap-cutting device has a cutter tube formed with an application section and a combination section, and the application section is provided with a first strap-cutting block and a second strap-cutting block and formed with a strap-guiding groove and a strap-cutting opening. The first strap-cutting block is disposed with a strap-cutting surface at one side opposite to the strap-cutting opening for threadably assembling a cutting unit thereon, which can be assembled with or disassembled from the strap-cutting surface. By so designing, the strap-cutting surface of a packer in the present invention enables a user to cut off packing straps quickly and accurately through the strap-cutting opening and the replaceable cutting unit, convenient in use and able to lower cost.



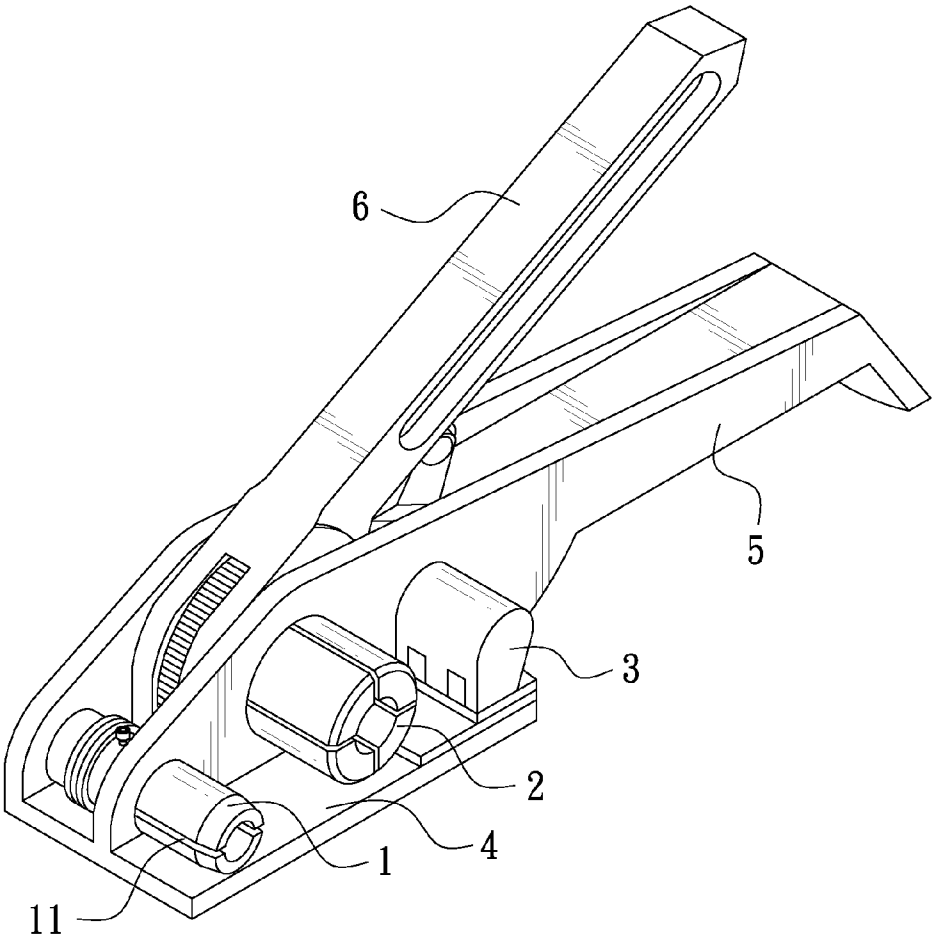


FIG. 1
PRIOR ART

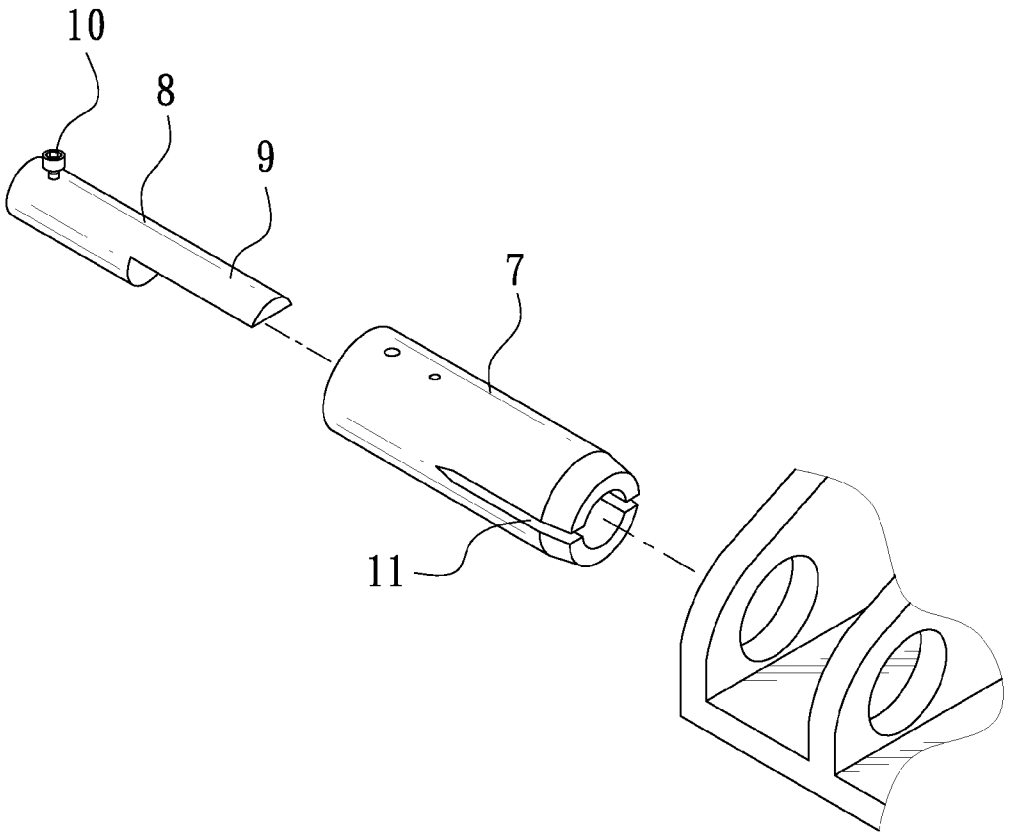


FIG. 2
PRIOR ART

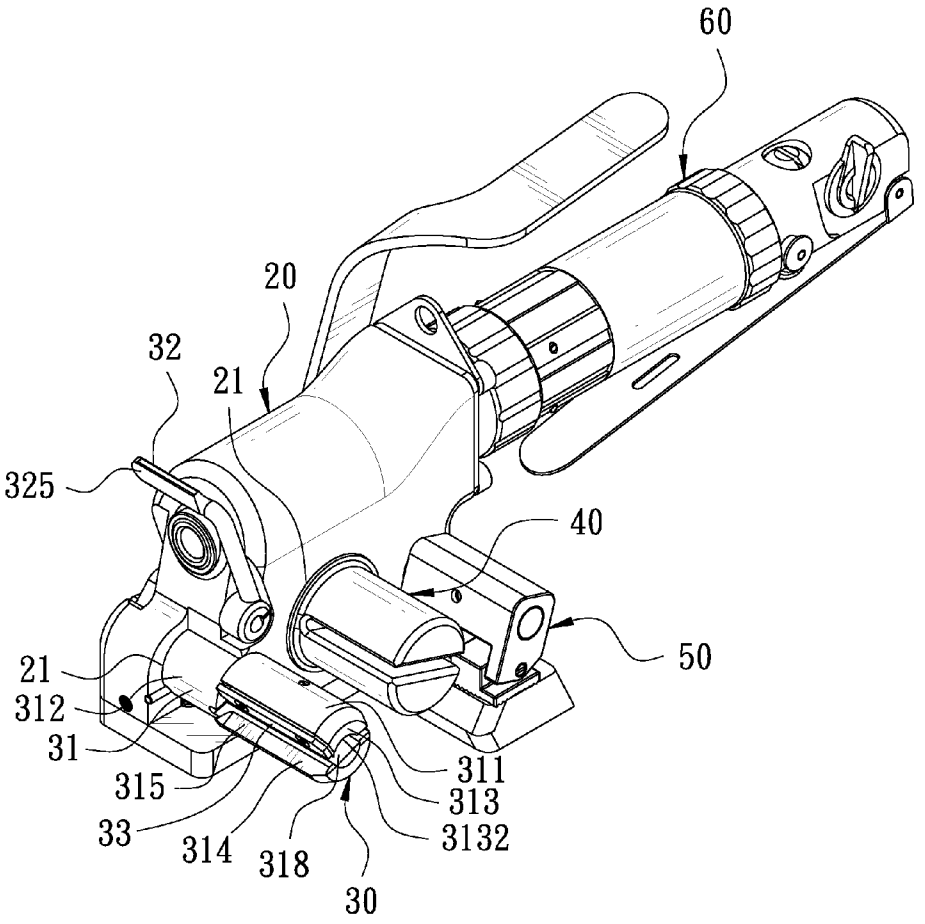


FIG. 3

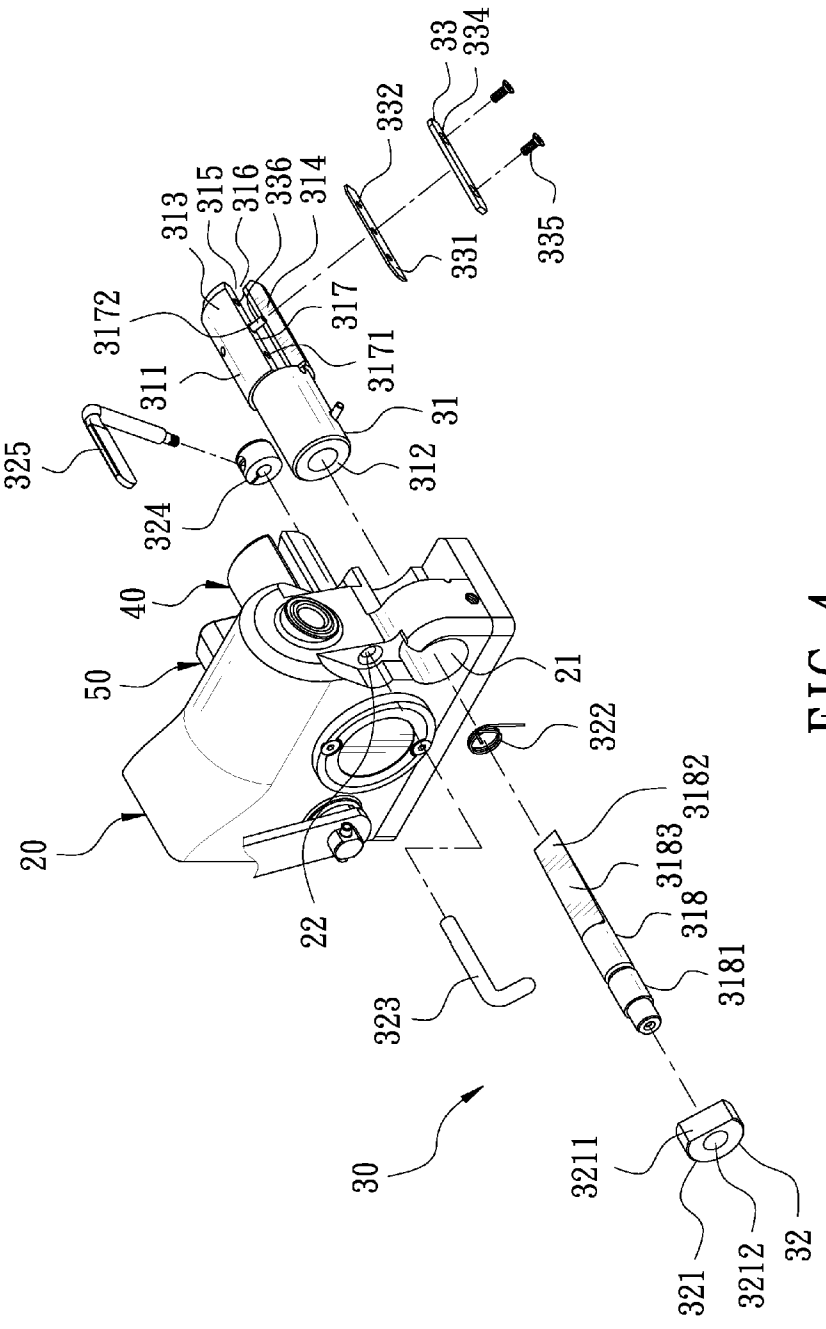

33
334
332
313
315
316
336
314
335
331
3172
317
3171
311
31
325
312
324
40
50
21
322
20
3182
3183
318
22
3181
323
30
3211
321
3212
32

FIG. 4

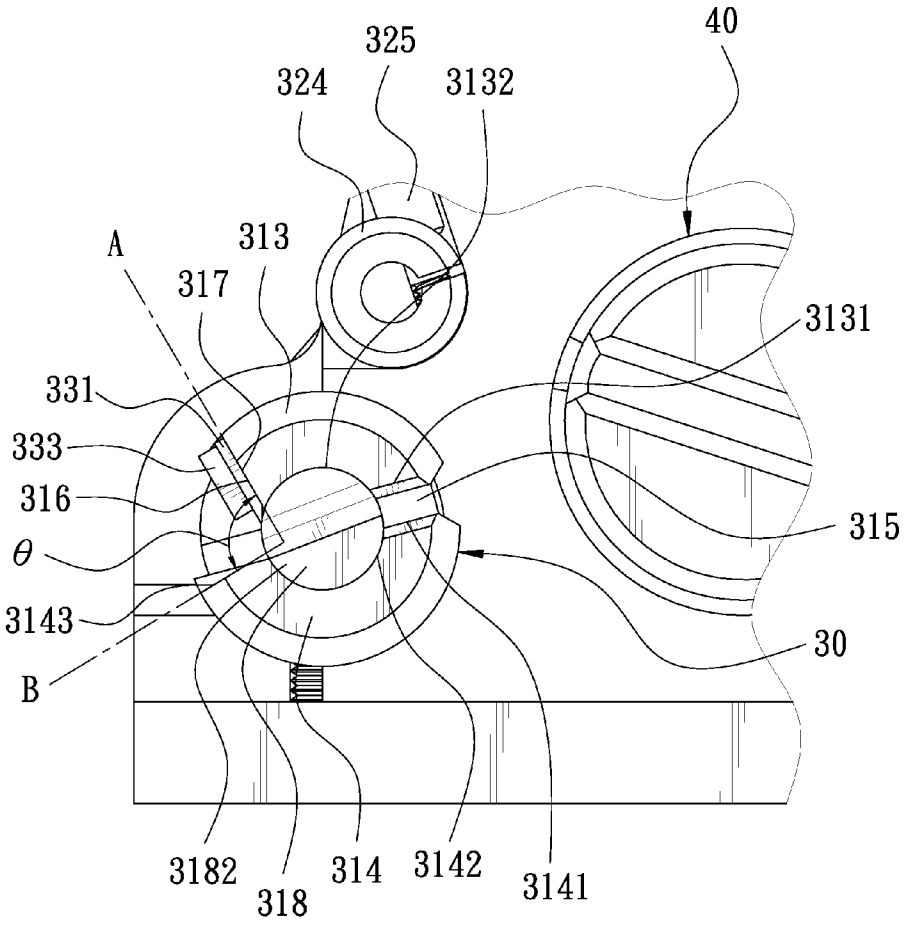

40
325
324
3132
A
313
317
3131
331
333
316
315
θ
3143
30
B
3182
318
314
3142
3141

FIG. 5

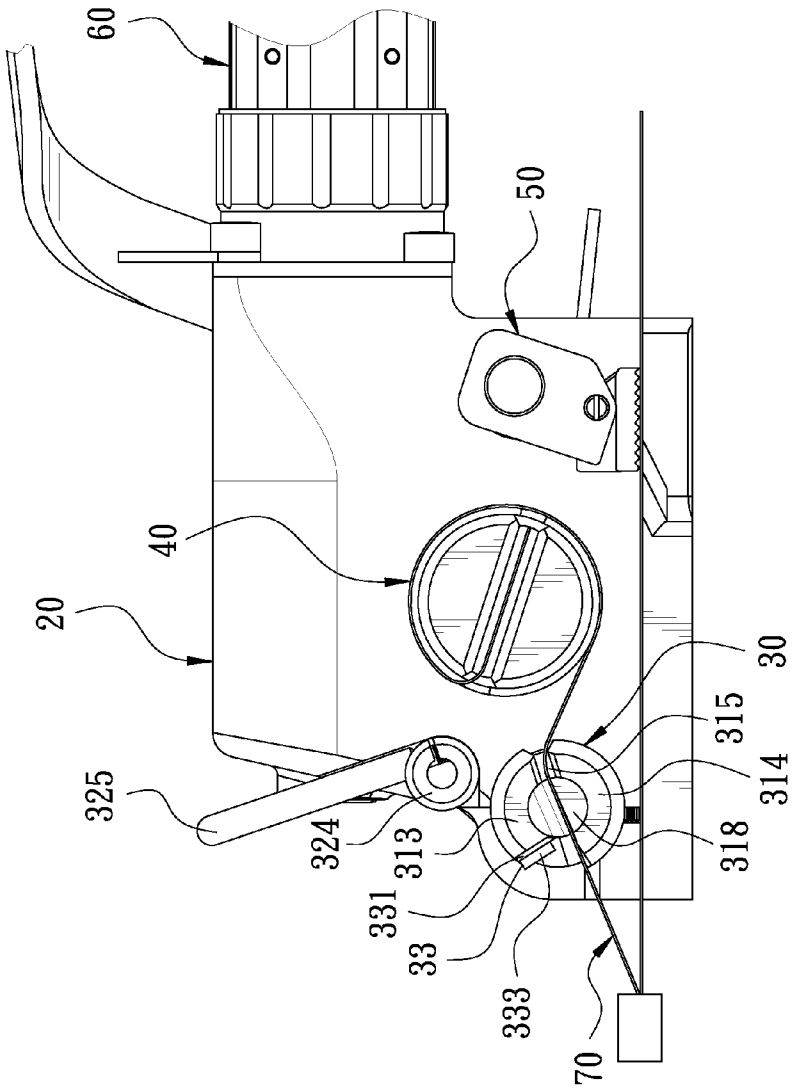


FIG. 6

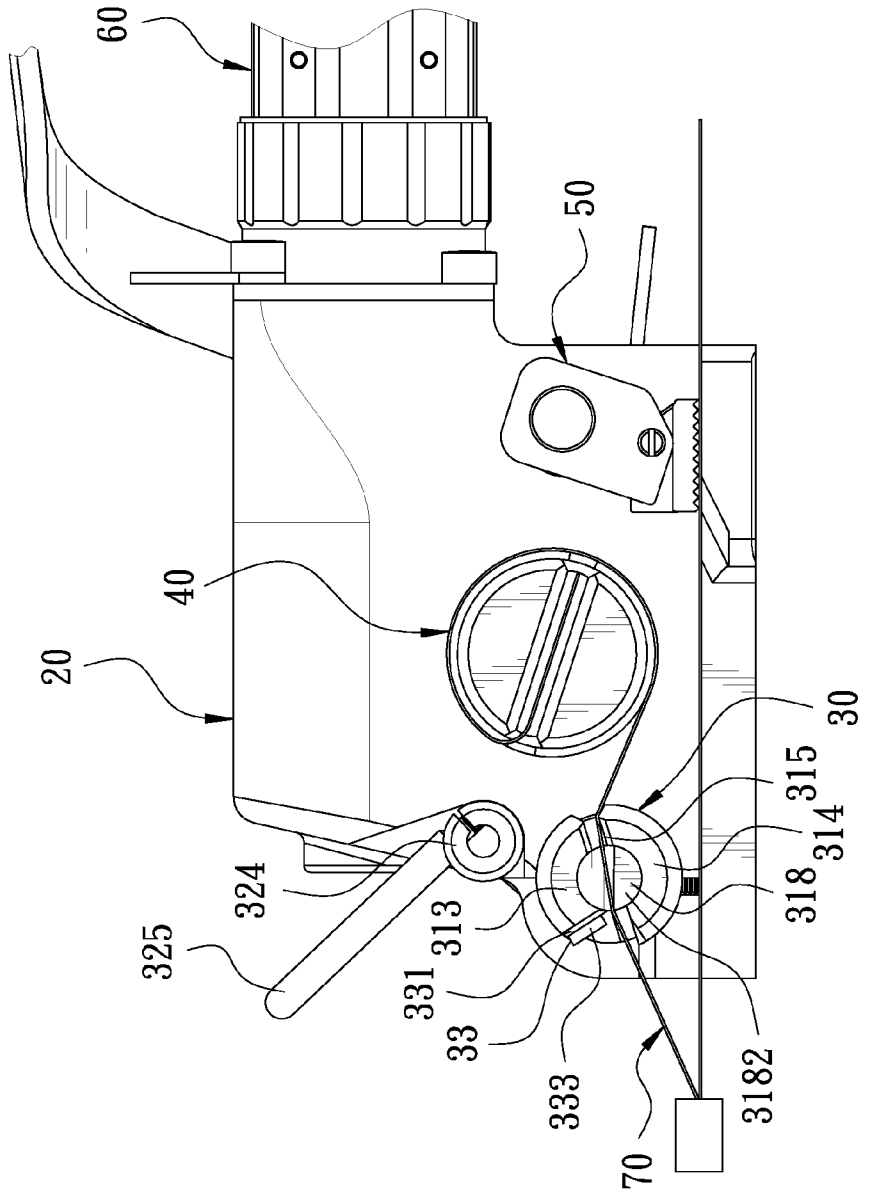


FIG. 7

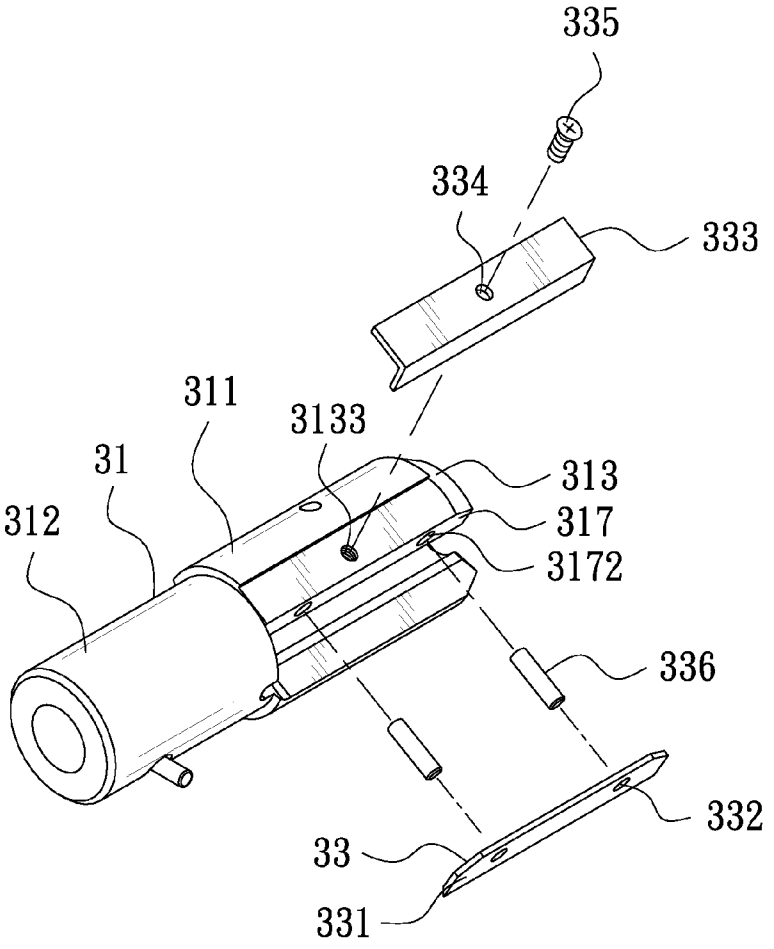


FIG. 8

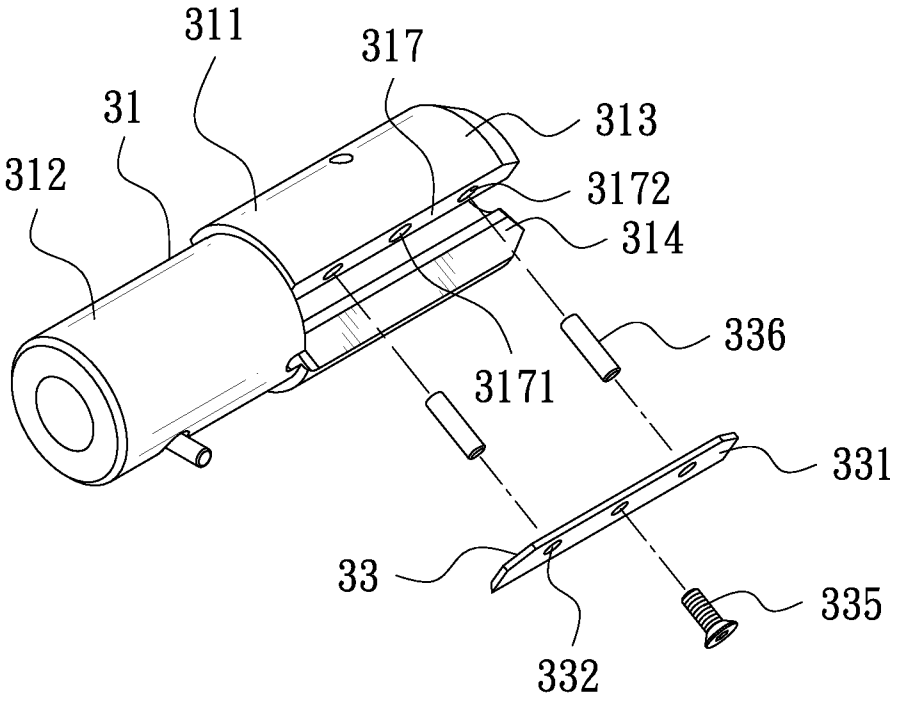


FIG. 9

CUTTING-OFF STRUCTURE OF A PACKER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a cutting-off structure of a packer, particular to one containing a cutting unit provided with a replaceable blade to be pressed downward for cutting off packing straps.

[0003] 2. Description of the Prior Art

[0004] A conventional packer, as shown in FIGS. **1** and **2**, includes a cutting device **1**, a clamp-stop device **2** and a strap-pressing device **3** that are assembled on a base **4**. A control lever **6** is pivotally provided at a location of a handle **5** of the base **4** and axially connected with the clamp-stop device **3**. The cutting device **1** of the conventional packer, as shown in FIG. **2**, contains a cutter sleeve **7** set therein with a cutter **8** having its right side formed with a cutting edge **9** and its left side firmly assembled with a fixed pin **10**, and the cutter sleeve **7** has its circumferential edge of another end cut with a slot **11**. In using, a user can press down the control lever **6** to have its front end moving upward to actuate the fixed pin **10** to turn and drive the cutter **8** to rotate for cutting off the packing strap placed in the slot **11** of the cutter sleeve **7**.

[0005] However, after the cutter **8** is employed to cut off packing straps for a long period of time, the cutter **8** will become dull and wear off and it needs to replace the whole cutter **8**, and the cutter **8** of the conventional packer is complicated in manufacturing and difficult in processing and further, the conventional packer is hard to be assembled. In view of the defects mentioned above, the inventor of this invention thinks that the conventional packer is necessary to be ameliorated and hence devises this invention.

SUMMARY DESCRIPTION OF DRAWINGS

[0006] This invention is devised to offer a cutting-off structure of a packer, which is provided with a strap-cutting device with a replaceable blade, able to lower cost and let a user to cut off packing straps accurately. The cutting-off structure of a packer in the present invention includes a main body having two sides bored with three juxtaposed through holes for orderly receiving a strap-cutting device, a strap-winding device and a strap-pressing device and having another side installed with a power device that is connected with the strap-winding device. The strap-cutting device contains a cutter tube formed with an application section and a combination section. The combination section is correspondingly received in one of the through holes, while the application section is protruded out of one side of the main body and formed with a first strap-cutting block and a second strap-cutting block, having a strap-guiding groove formed between the first strap-cutting block and the second strap-cutting block. The first strap-cutting block is recessed and disposed with a strap-cutting opening at one side opposite to the strap-cutting groove, and a strap-cutting surface is defined by the first strap-cutting block and the strap-cutting opening for a cutting unit to be assembled thereon.

[0007] The cutting-off structure of a packer of this invention is assembled thereon with a packing strap, which has one end fixed by the strap-pressing device and another end wound around an article to be packed and then, the packing strap is inserted through the strap-guiding groove and then wound up and fixed by the strap-winding device. When the packing strap is to be cut, a user can make use of the cutting unit to cut off the packing strap through the strap-cutting opening and the strap-cutting surface. In addition, the cutting unit of this invention is replaceable, able to be assembled with or disassembled from the strap-cutting surface of the first strap-cutting block. Therefore, the cutting unit of the strap-cutting device of this invention can conveniently be replaced, able to lower cost and let a user to cut off the packing strap accurately and quickly.

BRIEF DESCRIPTION OF DRAWINGS

[0008] This invention will be better understood by referring to the accompanying drawings, wherein:

[0009] FIG. **1** is a perspective view of a conventional packer;

[0010] FIG. **2** is a partial exploded perspective view of the conventional packer;

[0011] FIG. **3** is a perspective view of a first preferred embodiment of a cutting-off structure of a packer in the present invention;

[0012] FIG. **4** is a partial exploded perspective view of the first preferred embodiment of the cutting-off structure of the packer in the present invention;

[0013] FIG. **5** is a plane view of the first preferred embodiment of a strap-cutting device of the packer in the present invention;

[0014] FIG. **6** is a schematic view of the first preferred embodiment of the cutting-off structure of the packer in the present invention, illustrating a state before the packing strap is cut off;

[0015] FIG. **7** is a schematic view of the first preferred embodiment of the cutting-off structure of the packer in the present invention, illustrating a state when the packing strap is being cut off;

[0016] FIG. **8** is a partial exploded perspective view of a second preferred embodiment of the cutting-off structure of the packer in the present invention; and

[0017] FIG. **9** is a partial exploded perspective view of a third preferred embodiment of the cutting-off structure of the packer in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] A first preferred embodiment of a cutting-off structure of a packer in the present invention, as shown in FIGS. **3** and **4**, includes a main body **20**, a strap-cutting device **30**, a strap-winding device **40**, a strap-pressing device **50** and a power device **60** that is provided at one side of the main body **20** and connected with the strap-winding device. In this preferred embodiment, the internal structure of the strap-winding device **40** and the strap-pressing device **50** and the power device **60** is the same as the conventional structure so it is unnecessary to go into details.

[0019] The main body **20** has two sides bored with three juxtaposed through holes **21** arranged horizontally for orderly receiving the strap-cutting device **30**, the strap-winding device **40** and the strap-pressing device **50** and has another side provided with a shaft hole **22** at a location near an upper side of one through hole **21**.

[0020] The strap-cutting device **30** consists of a cutter tube **31** and an interacting device **32**. The cutter tube **31** is formed with an application section **311** and a combination section **312**, and the combination section **312** is to be correspondingly combined with the through hole **21** of the main body **20** while

the application section **311** is protruded out of one side of the main body **20**. The application section **311** is formed with a first strap-cutting block **313** and a second strap-cutting block **314**, having a strap-guiding groove **315** formed between the first strap-cutting block **313** and the second strap-cutting block **314**. Referring to FIGS. **4** and **5**, the first strap-cutting block **311** has one side, opposite to the strap-guiding groove **315**, formed into a first sidewall **3131** having its front section recessed and provided with a first circular arc groove **3132**. The second strap-cutting block **314** is formed with a second sidewall **3141** opposite to the first sidewall **3131** of the first strap-cutting block **313** and having its intermediate section recessed and formed with a second circular arc groove **3142**, which has one side formed into a guide slant **3143**. The first sidewall **3131** and the second sidewall **3141** are corresponding with each other and provided in parallel horizontally.

[0021] In addition, the first strap-cutting block **313** is disposed with a strap-cutting opening **316** at one side opposite to the strap-guiding groove **315**, and a strap-cutting surface **317** is defined by the first strap-cutting block **313** opposite to the strap-cutting opening **316**. The second strap-cutting block **314** is formed with a guide slant **3143** at one side opposite to the location of the strap-cutting opening **316**. The strap-cutting surface **317** of the first strap-cutting block **313** is bored with at least two threaded holes **3171** and a fixing hole **3172** between the two threaded holes **3171**. A cutting unit **33** is threadably secured on the strap-cutting surface **317**, containing a blade **331** and a blade press plate **333** to be superposed on one side of the blade **331**, which has another side closely attached to the strap-cutting surface **317**. The blade **331** is bored with a plurality of inert holes **332** respectively corresponding with the two threaded holes **3171** and the fixing hole **3172** of the strap-cutting surface **317**, and the blade press plate **333** is bored with a plurality of insert holes **334** corresponding to the two threaded holes **3171** and the fixing hole **3172**. Plural screws **335** are correspondingly inserted through the insert holes **334** of the blade press plate **333** and through the insert holes **332** of the blade **331** and then screwed with threaded holes **3171**, and an insert pin **336** is orderly and correspondingly inserted through the insert hole **334** of the blade-pressing plate **333** and through the insert hole **332** of the blade **331** and then secured in the fixing hole **3172** of the strap-cutting surface **317** to firmly position both the blade **331** and the blade press plate **333** on the strap-cutting surface **317** of the first strap-cutting block **313**.

[0022] Referring to FIG. **5**, in this preferred embodiment, a first axis (A) is defined by the first strap-cutting block **313** along the strap-cutting surface **317**, while a second axis (B) is defined by the second strap-cutting block **314** along the guide slant **3143**, with an angle of about 90 degrees formed between the first axis (A) and the second axis (B). The cutter tube **31** has its central portion axially and pivotally mounted with a cutter core **318** formed with a cutter rod **3181** corresponding to the combination section **312** of the cutter tube **31**. The cutter rod **3181** has one end inserted in the combination section **312** of the cutter tube **31** and another end extending to form a press block **3182** corresponding with the application section **311** of the cutter tube **31**. The press block **3182** is positioned in the strap-guiding groove **315**, having one side closely contacting with the second circular arc groove **3142** and another side, opposite to the first strap-cutting block **313**, formed into an oblique plane **3183** slanting from the cutter rod **3181** toward the cutter tube **31**.

[0023] Referring to FIG. **4**, the interacting device **32** is provided with a cutter core ring **321** and a torsional spring **322**. The cutter core ring **321** has one side formed into a tapered plane **3211** and a central portion bored with a shaft hole **3212**, with the shaft hole **3212** and the torsional spring **322** correspondingly fitted at one end of the cutter rod **3181**. The cutter core ring **321** is positioned at the outer side of the torsional spring **322**, which has one end pressed on the tapered plane **3211** of the cutter core ring **321** to make the cutter rod **3181** abut against the second strap-cutting block **314** and have one side of the press block **3182** closely attached to one side of the second strap-cutting block **314**. The interacting device **32** further contains an L-shaped cutter core-pushing rod **323**, which has one end pressed on the tapered plane **3211** and another end inserted through the shaft hole **22** of the main body **20** and fitted thereon with a cutter core-pushing rod ring **324**, which is fixed thereon with a handle **325**.

[0024] Referring to FIGS. **4**, **6** and **7**, in using, firstly, a packing strap **70** is assembled on the main body **20**, having one end secured by the strap-pressing device **50** and another end wound around an article to be packed and then orderly inserted through the strap-guiding groove **315** and wound and fixed in position by the strap-winding device **40**. Next, the power device **60** is started to actuate the strap-winding device **40** to wind up the packing strap **70** to enable the packing strap **70** to bind the article with tightness. When the article is tightly bound by the packing strap **70**, the handle **325** of the strap-cutting device **30** can be controlled by a user to turn and actuate the cutter core-pushing rod **323** to rotate and press the tapered plane **3211** of the cutter core ring **321** for turning around the cutter core ring **321**. At this time, referring to FIG. **7**, the cutter core ring **321** will actuate the cutter rod **3181** to rotate together to have one side of the press block **3182** pushing up the lower side of the packing strap **70** to let the upper side of the packing strap **70** cut by the blade **331** of the cutting unit **33**, thus able to cut off the packing strap **70**.

[0025] Referring to FIGS. **4** and **5**, since the first strap-cutting block **313** has one side formed with the strap-cutting opening **316**, and the blade **331** and the blade-pressing plate **333** of the cutting unit **33** are fixed on the strap-cutting surface **317** by means of the screws **335**; therefore, when the blade **331** is used for cutting the packing strap **70** for a long period of time and becomes dull and wears out, a user can unscrew the screws **335** and remove the insert pin **336** for replacing the blade **331** with a new one. After the blade **331** is replaced, the insert pin **336** is orderly inserted through the insert hole **334** of the blade-pressing plate **333** and through the insert hole **332** of the blade **331** and then secured in the fixing hole **3172** of the strap-cutting surface **317**, and the screws **335** are inserted through the insert holes **334** of the blade-pressing plate **333** and through the insert holes **332** of the blade **331** and then threadably fixed in the threaded hole **3171** for stably positioning both the blade **331** and the blade-pressing plate **333** on the strap-cutting surface **317** of the first strap-cutting block **313**. Referring to FIG. **5**, the second strap-cutting block **314** is formed with the guide slant **3143** at one side opposite to the strap-cutting opening **316** so that the strap **70** can smoothly pass through the strap-guiding groove **315** and, in cooperation with the angle (θ) formed between the first axis (A) and the second axis (B), when one side of the press block **3182** is actuated to push up the lower side of the packing strap **70**, the packing strap **70** can be cut off quickly. Thus, the strap-cutting surface **317** of the first strap-cutting block **313** can be disas-

sembled from or assembled with the cutting unit **33** via the strap-cutting opening **316**. Compared with the cutter **8** of the conventional packer, the cutting unit **33** of this invention can be replaced conveniently, able to lower cost and let a user to cut off packing straps accurately and quickly.

[0026] A second preferred embodiment of a cutting-off structure of a packer in the present invention, as shown in FIG. **8**, is almost the same in structure and members as those of the first preferred embodiment, except the structure of the first strap-cutting block **313** and the cutting unit **33**. In the second preferred embodiment, the blade-pressing plate **333** of the cutting unit **33** is L-shaped and has its topside bored with an insert hole **334**, and the first strap-cutting block **313** has its outer side provided with a threaded hole **3133** corresponding to the insert hole **334**. Further, the strap-cutting surface **317** of the first strap-cutting block **313** is bored with two fixing holes **3172**, which are the same as the fixing hole **3172** of the first preferred embodiment, and the blade **331** is bores with two insert holes **332** corresponding to the fixing holes **3172**. In assembly, the blade **331** is closely attached to the strap-cutting surface **317**, and two insert pins **336** are correspondingly inserted through the two insert holes **332** of the blade **331** and then secured in the fixing holes **3172** of the strap-cutting surface **317**, letting the blade **331** positioned at a predetermined location and then, the blade-pressing plate **333** has its inner side closely attached to and pressed on the outer side of the blade **331** and finally, a screw **335** is inserted through the insert hole **334** of the blade-pressing plate **333** and then screwed in the threaded hole **3133** of the first strap-cutting block **313** for firmly positioning the blade **331** on the first strap-cutting block **313**. Thus, the cutting unit **33** of this invention can conveniently be replaced via the L-shaped blade-pressing plate **333**, able to lower cost and cut off packing straps quickly.

[0027] A third preferred embodiment of cutting-off structure of a packer in the present invention, as shown in FIG. **9**, is different from the first preferred embodiment in structure of the first strap-cutting block **313** and the cutting unit **33**. In the third preferred embodiment, the cutting unit **33** is only provided with a blade **331**, and the strap-cutting surface **317** of the first strap-cutting block **313** is bored with two fixing holes **3172** and a threaded hole **3171** located between the two fixing holes **3172**. Further, the blade **331** is disposed with a plurality of insert holes **332** corresponding to the fixing holes **3172** and the threaded hole **3171**. In assembly, two insert pins **336** are correspondingly inserted through the insert holes **332** of the blade **331** and then inserted in the fixing hole **3172** of the strap-cutting surface **317** and lastly, a screw **335** is inserted through the central insert hole **332** of the blade **331** and then threadably secured in the threaded hole **3171** for stably positioning the blade **331** on the strap-cutting surface **317** of the first strap-cutting block **313**, thus, equally attaining the same efficacy of stably positioning and conveniently replacing the blade **331** as that described in the first and the second preferred embodiments and hence able to lower cost.

[0028] While the preferred embodiments of the invention have been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.

What is claimed is:

1. A cutting-off structure of a packer comprising a main body, said main body provided with a strap-cutting device, a strap-winding device and a strap-pressing device, said main body having one side installed with a power device connected with said strap-winding device; and characterized by,

Said strap-cutting device formed with a cutter tube, said cutter tube formed with an application section and a combination section, said combination section combined with said main body, said application section protruding out of one side of said main body, said application section composed of a first strap-cutting block and a second strap-cutting block, a strap-guiding groove formed between said first strap-cutting block and said second strap-cutting block, said first strap-cutting block recessed and provided with a strap-cutting opening at one side opposite to said strap-guiding groove, a strap-cutting surface defined by said first strap-cutting block opposite to said strap-cutting opening, said strap-cutting surface fixed thereon with a cutting unit; and

Packing straps able to be cut off through said strap-cutting opening and said cutting unit, said cutting unit easy to be assembled with or disassembled from said strap-cutting surface, said cutting unit being replaceable and hence able to economize cost.

2. The cutting-off structure of a packer as claimed in claim **1**, wherein said cutter tube has a central portion axially and pivotally mounted with a cutter core, said cutter core formed with a cutter rod corresponding to said combination section of said cutter tube, said cutter rod having one end formed with a press block corresponding to said application section of said cutter tube, said press block positioned in said strap-guiding groove.

3. The cutting-off structure of a packer as claimed in claim **1**, wherein said second strap-cutting block is formed with a guide slant at one side opposite to said strap-cutting opening.

4. The cutting-off structure of a packer as claimed in claim **3**, wherein an angle is defined by said strap-cutting surface and said guide slant, and said angle is about 90 degrees.

5. The cutting-off structure of a packer as claimed in claim **1**, wherein said cutting unit is composed of a blade and a blade-pressing plate, said blade having one side attached to said strap-cutting surface, said blade-pressing plate pressing another side of said blade.

6. The cutting-off structure of a packer as claimed in claim **5**, wherein said strap-cutting surface of said strap-cutting device is provided with at least two threaded holes, and said blade and said blade-pressing plate are respectively bored with a plurality of insert holes corresponding to said threaded holes, plural screws correspondingly inserted through said insert holes and then threadably secured in said threaded hole for fixing both said blade and said blade-pressing plate on said strap-cutting surface of said first strap-cutting block.

7. The cutting-off structure of a packer as claimed in claim **2**, wherein said press block of said cutter core is formed with an oblique plane at one side opposite to said first strap-cutting block.

8. The cutting-off structure of a packer as claimed in claim **1**, wherein said first strap-cutting block is formed with a first sidewall at one side opposite to said strap-guiding groove, and said second strap-cutting block is formed with a second sidewall facing said first sidewall, said first sidewall and said second sidewall provided oppositely and horizontally.

* * * * *